

FY 2005 PROGRAM ELEMENT EVALUATION REPORT

OF THE

GROWING AREA CLASSIFICATION ELEMENT SHELLFISH SANITATION PROGRAM DEPARTMENT OF MARINE RESOURCES STATE OF MAINE

PREPARED BY

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PROGRAM ELEMENT EVALUATION REPORT

STATE: Maine

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PROGRAM ELEMENT EVALUATED: Growing Area Classification

A. Status of Previous Program Evaluation

The FY 2004 evaluation of the Maine Department of Marine Resources (DMR) Growing Area Program found that the DMR was in compliance with the National Shellfish Sanitation Program (NSSP) Model Ordinance (MO). Although the Growing Area Program was found to be in compliance three (3) recommendations were cited to help the state strengthen its program.

Below are the three recommendations noted in the FY 2004 evaluation followed by the state's response to each recommendation:

1. FDA recommends that the DMR provide a stand-alone narrative section as part of the Annual Update. The narrative should include overall discussions on such topics as: sample data review, pollution source changes and conditional area management plan compliance. The narrative should also include concluding remarks which reference classification changes, future or on-going survey work in the area and any other appropriate recommendations based on the totality of the facts provided within the Annual Update. The narrative should also be subjected to the internal peer review process.

The growing area staff members have begun writing more comprehensive narrative sections as part of the Annual Updates. The Annual Updates for 2004 have been completed. Increased descriptive information will be found in most reports for 2005. We expect full and consistent implementation statewide by 2006.

2. FDA recommends that the DMR provide detailed Conditional Area Management Plans. The plans should describe step by step how a conditional area is closed and then subsequently reopened. The plan should illustrate how proper implementation will be performed, to include contact information, compliance criteria and a complete list of activities to be performed.

The growing area staff members are in the process of reviewing the Conditional Area (CA) Management plans for completeness. The staff conducts an annual review of the CA plans at the beginning of each calendar year while the Annual Updates are being completed. The next full review of the CA plans will take place during the spring of 2005. The CA plans should be updated and ready for review during the FY 2005 program evaluation.

3. FDA recommends that the DMR review all closure lines as they correspond to the location of active sample stations. During the evaluation it was noted through file review and field reconnaissance that a small percentage of closure lines either fell between two sample stations or did not have an active station in the vicinity of the closure line. Whenever the topography permits (bays, harbors, rivers, etc.) the placement of a closure line should be determined by actual analytical data. It is understood that islands and certain peninsulas may be treated differently due to their configuration. Whenever such an instance occurs, the growing area central file should note any justification for closure line placement when no sample data exists.

The growing area staff members are reviewing the placement of sample stations in reference to their proximity to closure lines. Several sample stations are slated to be activated, deactivated or moved (if within 100 feet) to better represent the water quality at the closure lines. When the topography or accessibility do not allow a sample station directly on the border of a calculated closure line the specific reasons justifying the sample station location will be placed in the file of the sanitary survey.

B. Status of Current Evaluation

1. Total Number of Growing Areas Evaluated

The Maine Department of Marine Resources monitors 45 separate Shellfish Management Areas. Twelve of the Shellfish areas were selected to be evaluated. The number of evaluations is based upon a representative sampling plan designed to provide a 95 percent probability of detecting a 20 percent or greater defect level. The selection of the 12 growing areas was performed by Peter Koufopoulos, the Northeast Regional Shellfish Specialist. Mr. Koufopoulos utilized the Excel database program and performed a random number query. The selected growing areas are listed below.

Shellfish Management Areas

West - Boothbay Harbor Office		East - Lamoine State Park Office	
WC	-Cape Neddick	WX	-Penobscot River
WE	-Cape Porpoise	EA	-Bagaduce River
WL	-New Meadows River	EI	-Frenchman Bay
WM	-Kennebec River	EL	-Narraguagus Bay
WV	-Spruce Head	EP	-Englishman Bay
WY	-Isleboro	EU	-St. Croix River

2. Program Areas in Compliance

a) Sanitary Survey

General

The Maine DMR follows the NSSP Model Ordinance (MO) regarding the completion timeframes for all required reports. Currently the staff is required to complete the Sanitary Surveys every 12 years, the Triennial Reports every 3 years and the Annual Updates every year. Internal DMR policy states that all reports are to be formatted to meet the requirements of the MO. All Annual Updates are scheduled to be completed by February 28th each year for the previous calendar year. Conditional area management plans are re-evaluated on an annual basis. Information gathered from the management plan review is included in the Annual Update and used to support any changes in classification.

All conditionally managed areas that were reviewed during this evaluation period were closed according to the criteria established in the Conditional Area Management Plan. DMR also closes Approved waters during emergency conditions, typically heavy rainfall events. The DMR staff receives great pressure from the commercial shellfish harvesters to reopen closed areas as soon as possible. In lieu of shellfish tissue sampling, areas closed due to management plan violations are normally closed for a minimum of fourteen days after the event. In order to be more responsive to the harvesters demand, the DMR has decided to incur the additional expense of sampling both shellfish growing waters and shellfish tissues in an attempt to open the shellfish harvesting areas more quickly whenever possible and appropriate. A closed area will reopen only after acceptable water samples and/or shellfish tissue results are received and evaluated. This sampling also supplements ongoing studies to document relationships between fecal coliform bacteria levels in the water and fecal coliform bacteria levels in the surrounding shellfish. Any correlation made could reduce the effort of future sampling and also allow the fourteen-day cleansing period to be shortened.

Required

Sanitary Surveys are completed on all Shellfish Management Areas prior to the harvest of shellstock for human consumption. A Sanitary Survey along with its associated shoreline survey is used to determine the proper classification of an area as Approved, Conditionally Approved, Restricted, Conditionally Restricted or Prohibited.

Written Sanitary Survey reports were present and complete for all 12 management areas reviewed. DMR follows the format described in the NSSP MO Guidance Document Growing Area @.03. The reviewed survey reports did have all of the

required sections and subsections. The various sections within the report have very detailed information; including charts, graphs and pictures to further enhance the discussion.

Performance

The DMR schedules Sanitary Surveys to be completed once every 12 years for each Shellfish Management Area. The water quality staff does recognize that if a Sanitary Survey (or a Triennial Review) is not completed within the specified time frames then the Shellfish Management Area shall be placed in the closed status pending completion of the report.

Triennial Report --

The DMR Shellfish Program completes Triennial Reports every three years in order to supplement and update information found within the Sanitary Survey. The triennials are more comprehensive than the Annual Updates. The triennials are intended to be a thorough review of all known pollution sources; an actual reassessment of their impact on the shellfish growing waters. The Triennial Reports meet the minimum requirements of the NSSP MO.

The Triennial Reports were the focus of the FY 2005 evaluation. The reports were reviewed for completeness and accuracy based on field observations. The reports were reviewed by the Shellfish Specialist while they were in draft form. Comments were forwarded to the appropriate growing area staff member for concurrence and inclusion within the report when necessary.

Annual Update --

Annual Updates are designed to review important performance standards, sampling data and pollution source information to determine if a downward trend in water quality is occurring. The Annual Updates were reviewed as part of this evaluation and found to be accurate and complete based on field observations; thus they are in compliance with the minimum requirements of the NSSP MO.

The review of the annual reports revealed greater detail in the narrative sections of the updates; this is an improvement over past years. The growing area staff members, with direct oversight from management, continue to review and improve upon the reports outline (template) to help ensure consistent reporting by all staff members.

b) Shoreline Survey Requirements

All potential and actual pollution sources have been evaluated by the DMR and documented in the initial Sanitary Survey Reports for each shellfish growing area. Pollution source information is constantly updated throughout the year by both boat and vehicle. The pollution source information gathered throughout the year is then incorporated into the next appropriate report. Specific pollution concerns are individually discussed below as they are found in the reports along with noted details from the shoreline survey database:

Domestic/Industrial/Agriculture Wastes

Many of the 45 Shellfish Management Areas have Wastewater Treatment Plants that discharge directly into shellfish waters; or the plants affect the growing area by discharging into rivers which drain into the growing areas. DMR has placed buffer zones around all of the discharges located in the coastal zone. Many of the treatment plant outfalls have completed hydrographic studies. Outfalls waiting for these studies to be completed have buffer zones based on mathematical calculations using worst case situations and untreated or partially treated sewage.

There are very few industrial discharges along the coast of Maine. Most of them are located in heavily populated areas which have an existing closure due to other influences. Agricultural runoff is not a problem for many growing areas along the coast. The bold rocky coast of Maine is not conducive for large amounts of livestock. There are vast blueberry fields near the coastal waters; however stream sampling has not shown their overland runoff to pose a problem to the surrounding water.

Domestic Waste - Individual Sewage Disposal Systems

As is often the case in coastal Maine, the subsurface soil composition is not always adequate for establishing proper leach fields. Consequently the majority of the recently installed septic systems are designed to have raised bed leach fields. Prior to the use of this more modern sewage disposal system, the coastal area of Maine relied on a system known as an Overboard Discharge (OBD). The Maine Department of Environmental Protection (DEP) currently licenses, regulates, and inspects these OBDs which are approved sewage treatment systems consisting of a sand filter or mechanical treatment system and a chlorine disinfection unit used to treat discharges of sanitary waste from residential and commercial facilities. If the system is designed properly the chlorinated waste is discharged through a pipe extending to below the low tide mark. OBDs have been regulated in Maine since the late 1970s when direct discharges of untreated wastes were banned. New OBDs are prohibited by law however, existing systems that remain licensed and inspected may continue to be used until the owner is

offered a grant from the Maine Overboard Discharge Program administered by the DEP. The program offers money to replace the OBD with a traditional septic system; or find and/or design an alternative system that can be installed. The Maine Overboard Discharge Program awards grants based upon a priority system. OBDs located in the most productive shellfish habitats are the highest priority for removal. If any of the OBDs are found not to be working properly then that system is given priority for replacement.

Existing OBD outfalls do have a prohibited closure zone placed around the end of the pipe. The size of the closure zone is based on calculations generated from the permit information. The water depth (for dilution, including viral), permitted flow rate and the average fecal coliform concentration for a chlorinated system of this type, are all factors used to establish a buffer zone to protect public health.

Drainage Ditches - Stormwater Runoff

Stormwater runoff from drainage ditches, creeks and streams are considered to have the largest impact on water quality in the growing areas of Maine. Stormwater transports pollutants, including fecal coliform bacteria, from many of the indirect pollution sources in the drainage basin, to the growing area. The impact of these outfalls is evaluated by strategically placing sampling stations in these ditches, creeks and streams and also at their confluence with the growing area.

As with many indirect sources of pollution, the overall impact from these specified drainage-ways on the growing area is only known through the review of long-term historical data. Most of the data centers on heavy rainfall events. This is due to the fact that these drainage-ways, which may be dry most of the year, will begin to flow, becoming a conduit for potential pollution to reach the viable shellfish areas. Actual flow rates are now being collected and are used to generate fecal loading calculations.

Wildlife/Domestic Animals

General descriptions of migratory waterfowl and typical populations of other regional wildlife are included in the shoreline survey reports. Regional wildlife populations are considered significant contributors to the fecal coliform levels in the growing areas during rain events within the local drainage basin. Migratory waterfowl are contributors also; however, the overall impact of wildlife, in general, is ultimately unknown.

Domestic animals within the management areas are typically dogs and cats. Few homes have horses and fewer still have other barnyard type animals as domesticated pets.

Marinas

All marinas within close proximity to Approved shellfish harvesting waters were evaluated as the focus of the FY 2002 Growing Area Program Evaluation. The evaluation noted that the marina community within Maine will only operate part of the year due to adverse regional weather. The operating procedures the marinas have in place provide an excellent opportunity for the shellfish growing waters to be accessible, at least part of the year, to direct market harvest through the use of conditional management plans.

The closure zones were created by the state using volumetric calculations and reverified during the evaluation. The basic formulas used were found in FDA guidance issued in June 1989, which describes the proper procedure when establishing a precautionary closure zone around a marina for the purpose of protecting public health.

Radionuclides/Metals

There were no known sources of radionuclides or heavy metals impacting any of the growing areas evaluated. There is some metals data in the central files for those growing areas near industrial or more heavily populated areas. General statements to this effect are made in each of the growing area reports.

Vibrio Species (Illnesses)

The State of Maine has not been the original source of shellfish associated with any *Vibrio vulnificus* (*V.v.*) illness in the past three years. Maine was the possible source of three *Vibrio parahaemolyticus* (*V.p.*) illnesses in the past four years.

- A 30 year old female consumed soft shell clams as an appetizer, along with a broiled seafood platter as the main course, on July 3, 2002 with illness onset on July 5, 2002. The victim recovered from the illness. The suspect clams were harvested from the Sheepscot River in Maine.
- A 34 year old female, consumed six raw oysters as part of a sample platter on June 26, 2004 with illness onset the same day. The victim recovered from the illness. The oysters on the sample platter were from five different locations (four different states and 1 foreign country). A portion of the suspect oysters were from the Damariscotta River in Maine.
- A 67 year old male, consumed boiled/steamed clams as a meal on August 27, 2005 with illness onset the next morning. No other seafood was reportedly consumed. The victim died on August 30, 2005. The clams were purchased by the victim from a truck located at one of the Portland,

Maine fishing piers. The clams had no identification; therefore the harvest area is unknown.

No additional V.p. illnesses have been reported since the August 27, 2005 illness. The three illnesses above were isolated cases with no other individuals within their party becoming ill. The DMR currently operates under Time-Temperature Matrix Option 3 - Level 2 year round.

Marine Biotoxin Evaluation

The DMR has developed a marine biotoxin contingency plan for all marine and estuarine shellfish growing areas. The blue mussel, *Mytilus edulis*, is used as the indicator species when monitoring for paralytic shellfish poisoning (PSP). PSP levels in mussels usually become toxic two weeks before soft-shelled clams, *Mya arenaria*. Mussels are sampled weekly from April through October along the entire coast. Additional samples are collected as conditions dictate whether to further delineate a closure or simply assess an area that has experienced a slight rise in PSP concentrations.

Maine adheres to the PSP international toxic level standard of 80 micrograms per 100 g of whole shellfish tissue. Current state law allows the DMR to immediately close any area that contains toxins or contaminants known to be a public threat. This type of emergency closure effectively revokes all shellfish licenses; it also grants authority to embargo, confiscate and destroy contaminated or potentially contaminated shellfish.

When a closure is deemed necessary, the director of the biotoxin monitoring program will draft a legal notice and a map and notify the state's shellfish program director. The director of the biotoxin monitoring program will then submit the legal notice to the Commissioner's office. Once the legal notice has been signed by the Commissioner or his/her designee, the director of the biotoxin monitoring program will update the Shellfish Sanitation Hotline with the new information and send out an e-mail version to the distribution lists, while the shellfish program coordinator works on sending out copies of the legal notice by fax to all affected towns, marine patrol offices, and municipal shellfish wardens. The shellfish program coordinator also forwards the notice in local newspapers. The municipal shellfish wardens will post notifications in highly visible public places, and marine patrol officers will then conduct intense patrols of the affected harvesting areas by water and from land.

The DMR has established policy to assist in the coordination of a contaminated shellfish product recall. DMR requires the certified dealer to contact the receiving state's control authority and provide all pertinent recall and tagging information. The dealer will request the suspect product to be destroyed or returned to the state of origin for further assessment.

The DMR is in close contact with the Canadian shellfish authorities and other state officials along the eastern seaboard. Information regarding increased toxicity in a growing area and changes in phytoplankton populations is shared and analyzed. Collaboration by the DMR, USFDA and the University of Maine Cooperative Extension resulted in the creation of a volunteer-based phytoplankton monitoring program in 1996. There are currently 62 active volunteers sampling 46 sites statewide who report weekly to the DMR on their findings from plankton tows performed at stations assigned by the DMR.

c) Shoreline Survey Database

The Shellfish Management Areas within Maine are quite large. The water quality staff members have been forced to break areas into smaller, more manageable sized areas when conducting any shoreline survey reconnaissance. As a result, it may take several years for the pollution source assessment along the entire growing area shoreline to be completed.

The shoreline survey database is set up to be very comprehensive. The eastern-half of the state routinely updates the shoreline database from their field data sheets. It was noted that only a portion of the western-half of the state's shoreline survey information has been entered into the computer. Currently hardcopies of their shoreline data must be reviewed to determine if correlations exist between water quality and identified pollution source locations.

3. Current Findings

a) State Program Deficiencies

No administrative deficiencies were cited during the FY 2005 program evaluation per Chapter IV of the NSSP MO. No program wide deficiencies related to shoreline survey activities or the shoreline survey database were noted.

b) Recommendations

No specific recommendations were made as a result of the evaluation.

c) Technical Comments

i. During the review of the Sanitary Surveys in 2004 it was noted that the computer generated maps used to provide a visual description of the shellfish management areas did not depict an upland boundary. A distinct boundary through both the water and the upland topography would allow for a more clear determination to where pollution may be impacting shellfish waters; and for adjoining growing

areas, which water body may be affected by the particular pollution source. FDA encourages the DMR to continue previous work to identify the exact boundaries of the shellfish management area.

- ii. During the FY 2005 evaluation it was noted that the growing area staff was in the process of reviewing sample station locations as they relate to closure lines. As a result, sample stations were being created, removed or altered to ensure compliance with the NSSP-MO. Closure lines which could not have sample stations created due to topography had proper documentation justifying their location added to the file. FDA encourages the DMR to continue previous work to assess the sample station locations as they relate to closure lines.
- iii. During the review of the Annual Updates completed in the beginning of 2005 it was noted that approximately half of the 45 reports had received a complete review by the author's colleagues. The Peer Review process which began in 2004 is an important tool to be used by the Public Health Division to ensure consistent operations between the two District Offices and similar reporting formats by the growing area/water quality specialist. FDA encourages the DMR to pursue this simple tool which will provide a consistent and accurate product for both the FDA and the Shellfish Industry in Maine.

4. Corrective Actions taken by the State

The DMR Growing Area Staff routinely submit Triennial and Annual reports in draft form to the Regional Shellfish Specialist for review and comment. Any report sections needing to be strengthened are returned to the DMR staff for improvements prior to the report becoming a final document. This type of cooperative peer review is performed throughout the year.

5. Action Plans Requested

No Action Plans were requested as part of this evaluation.

6. Accomplishments

General

The DMR Commissioner and Deputy Commissioner are working through the Governor's office to secure added funding, staff and resources for the Public Health Division. Several scenarios were submitted for review and the Governor has given approval for the DMR to submit for overtime funds and annual

overhead costs associated with switching to the membrane filtration method through the legislative Appropriations Committee. The Governor also supported the Department engaging with industry and legislature to explore other avenues of increased support for the Public Health Division.

Biotoxin

The 2005 red tide event may have been the worst on record, yet Maine was responsible for monitoring state and federal waters, and there were no reported illnesses or deaths associated with PSP toxins, and even at the worst point of the event, there were still some safe areas available for shellfish harvesting.

In order to augment their efforts to protect public health, the director of the biotoxin monitoring program issued weekly updates on the status of the PSP event to an e-mail distribution list of industry members, local media, and other interested parties, while the director of the shellfish program collaborated with Poison Control and the Maine Bureau of Health to distribute information on the symptoms of PSP intoxication.

In order to make better informed decisions on closures, the director of the biotoxin monitoring program increased efforts in the field by contracting with volunteer vessels for offshore monitoring with DMR staff aboard, and created a special license to allow certain individuals who cleared a marine patrol background check to collect inshore shellfish samples for PSP testing. In addition, more species of shellfish were monitored for PSP (a total of 11 species), as well as shrimp, herring, and lobster, and the presence of PSP toxin was detected for the first time on record in some of these species.

Growing Area

- Alison Sirois joined us this year as volunteer coordinator. She is the first coordinator to handle water quality, phytoplankton and horseshoe crab volunteers. Alison is working on some technological advances like web based reporting, using computer tablets in the field for shoreline survey work and other projects.
- Staff are confirming station locations with GPS and writing detailed directions so that cross training of staff can be implemented in the 2006 sampling year (and beyond) to increase flexibility of staffing resources and strengthen the team based approach to work.
- Staff has completed intense sample station location reviews in order to streamline sampling efforts and update the justification for their location.

7. New or Emerging Problems

As a result of the 2005 budget cuts, the prospect of having summer interns is uncertain. The effect on the program of having no summer interns for the 2006 season is that less shoreline survey work will be completed and less sampling will be done.

Growing Area Classification staff have been instructed by upper management to concentrate their efforts on maintaining open and approved areas where there is the greatest commercial harvesting or the greatest resource potential; i.e., if an area is prohibited or restricted but an overboard discharge (OBD) may be removed and the area has a lot of resource, then that area would receive attention if the work load permitted. In areas where there is minimal resource potential or recreational harvest only the DMR will not have the luxury of affording those areas the same level of attention as in previous years. The Volunteer Coordinator is available to work with groups in those areas if they wish to continue to pursue shoreline survey work and pollution abatement strategies.

The 2005 red tide season has been the worst on record, and many scientists are suggesting that it is highly likely to continue to be a serious issue every season. If this proves to be the case in 2006, then with current staff levels, the DMR will have no choice but to initiate much larger closure areas much sooner, and to keep these areas closed much longer, for both wild harvest and aquaculture. As for offshore monitoring, during the 2005 red tide season, state officials learned that PSP toxin can vary greatly over an extremely short distance within ocean quahog beds, creating a need for a much finer scale of monitoring. Recent resource mapping of ocean quahog beds allowed the DMR to adjust monitoring stations that allowed for the comprehensive assessment of more open area than has been available to the industry for at least the last four years. As of October 21, 2005, there will be over 1000 square miles open for ocean qualog harvesting, basically all of the ocean from Petit Manan Point in Steuben to Long Point in Cutler. The only way to maintain this area throughout a red tide season is to keep the monitoring level at the point that was developed in 2005, which requires approximately 60 - 80sample stations every week, using at least two vessels each week for these sampling trips. Without resources in staff and vessels to conduct this level of sampling, the DMR estimate they will only be able to maintain an area of less than 50 square miles. Maine has been a leader in New England by monitoring our own offshore ocean quahog fishery, almost all of which lies outside the 3-mile line. In other New England states, where the federal government handles the monitoring of these resources, thousands of square miles of ocean quahog beds remain closed at this time.

It is becoming increasingly evident that additional national and state requirements, budget cuts, restrictions on overtime, new technologies and increasing pressure from the shellfish industry and the environmentally conscious general public are placing an increased demand on an already overworked staff. The staff has begun to work beyond capacity. It was noted in the FY 2004 Growing Area Evaluation that within two years, in order to stay in compliance with the minimum requirements of the program, harvest areas

may need to be reclassified as prohibited resulting in reduced acreage available for harvest. The FY 2006 Growing Area Evaluation will begin in the summer of 2006. At that time the FDA will determine if the DMR has been able to complete all of the required activities necessary to maintain a quality and effective public health program, recognizing that services to industry may be reduced.

8. Technical Assistance and/or Training Requested by the State

No special training/technical assistance requests were received from the DMR.

9. Summary of the State's response to FDA evaluation

The ME DMR is committed to maintaining and improving compliance with the NSSP. We appreciate that Regional Shellfish Specialist Koufopoulos is readily available for technical assistance and will work with us on issues prior to annual review time. We look forward to working with him in the future.

10. Conclusion

The State of Maine DMR Growing Area Classification Program meets the requirements of the NSSP Model Ordinance. The water quality staff members continue to improve the program reports by adding detail in a consistent format. No additional FDA follow-up will be required as a result of the FY 2005 FDA Growing Area Program evaluation.